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That sustained agricultural growth can be accompanied by continuing poverty and that the benefits of growth do not always "trickle down" to those most in need was one of the important conclusions which emerged from a number of studies[1] carried out to describe the situation of the rural poor in Asian countries during the sixties. These studies went on to conclude further that a major reason why rural poverty has not diminished (or in some cases even increased) has more to do with the structure of the economy than its rate of growth and to quote, "the initial high degree of inequality of income and wealth, the concentration of economic surplus in a relatively few hands and the fragmented allocative mechanisms constitute a socio-economic context in which powerful dynamic forces tend to perpetuate and even accentuate low standards of living of a significant proportion of the rural population".[2]

Pakistan in the sixties appeared, in many ways to be the archetype of such an agrarian economy. The distribution of landholdings was highly unequal. A large proportion of the land was under tenant farming. The percentage of landless labour in the rural labour force was high. During the sixties, after a period of stagnation in the fifties, high rates of growth were achieved in agricultural production which for the first time outstripped the growth of population. Both the introduction of a "new technology" package and active government support policies played an important part in contributing to the performance of the agricultural sector. However, despite these developments, the evidence presented on the extent and trends in rural poverty suggested that by the end of the sixties not only was the absolute level

1 ILO, *Poverty and Landlessness in Rural Asia*, Geneva, 1977.
2 Ibid., pp. 21–22.

still exceedingly high but that there was little to suggest that any real improvement had taken place. Indeed by some criteria the situation had actually deteriorated.

While the major aim of this chapter is to extend the poverty studies of the sixties into the seventies, it also re-examines the evidence on rural poverty for the sixties, supplementing the results with new evidence where available, mainly to see whether the conclusions reached by earlier authors were in fact justified. An examination of the trends in rural poverty into the seventies has gained additional importance for a number of reasons. It could be argued, with some merit, that since the major increases in agricultural production took place in the latter half of the sixties (mainly after 1966) the time period covered by the earlier studies, i.e. till 1971/72 was not long enough to evaluate its "spill over" effect on rural poverty. The early seventies also saw the introduction of structural changes mainly in the form of land and tenancy reforms by the then government. As compared to the sixties agricultural growth drastically slowed down although there was a sharp recovery toward the end of the seventies. In the second half of the seventies there took place the phenomenon of overseas migration leading to a significant outflow of the labour force and large inflows of foreign remittances. These factors could have had an important impact on the extent and trend in rural poverty in the seventies.

The evidence on rural poverty for the sixties was based on data extracted from the Household Surveys of Income and Expenditure (hereafter referred to as HIES) and poverty was measured either in terms of arbitrarily fixed income levels or in terms of minimal nutritional requirements. While both definitions have very serious shortcomings (indeed the concept of poverty hardly lends itself to a precise definition), this chapter will confine itself strictly to a measure of poverty mainly in terms of these criteria. This is done in order to attempt a comparison between the two periods. In any case other measures such as the spread of education, health facilities, housing, availability of clean drinking water are difficult to quantify and, more importantly it is difficult to determine their impact on the poorest sections of the rural population.

The approach adopted for the analysis of rural poverty during the sixties and seventies is as follows. We start by critically examining the evidence on rural poverty based mainly on HIES data so as to help establish both its level and trend during the period covered. We then present, albeit briefly, a broad overview of the performance of the agrarian economy in terms of aggregate variables and, for the seventies, describe some of the important reforms and changes (e.g. land reforms and overseas migration). Finally, we try to come up with a possible explanation of the trends in rural poverty, especially by analysing changes in agrarian structure and in factors outside the rural economy such as overseas migration and remittances.

The task is a far more difficult and complex one than perhaps earlier writers have cared to admit. The limitations of the available data on which poverty estimates are based are indeed extremely severe. For the sixties estimates of rural poverty have been subject to considerable criticism. For the

seventies, the evidence based on HIES data are available only for 1979 which seriously limits any attempt to build up a picture for the earlier years.

However, despite these serious limitations, one can still try to thread together the various pieces of evidence so as to come up with some tentative conclusions. For the sixties, there is now sufficient evidence to suggest that there was little decrease in the level of rural poverty and indeed on balance the evidence points towards a significant increase. The data for the end seventies suggest a decline, bringing it nearer to the levels it was in the early sixties, but still high enough to merit the closest attention and concern. An important finding of our study is that in analysing the high levels of rural poverty the focus of attention will have to shift to the non-farm population and its rate of growth in the rural areas. As regards the factors which have contributed to its high rate of growth in the period covered, our analysis suggests that these can be mainly traced to the changes in the agrarian structure, especially the size distribution of holdings and the transformation in the rural occupational distribution of households induced by technological changes directly related to the inequitable structure of landholdings.

Evidence on Rural Poverty

Before we examine the evidence on rural poverty for the seventies, we present the main findings of the earlier studies for the sixties and early seventies. However, because of methodological shortcomings and differences in defining the poverty line, these cannot form the basis of a comparison between the sixties and our estimates for the seventies. This necessitates our having to reconstruct estimates for the levels of poverty for some selected years for the earlier period. The results, although still suffering from many shortcomings, do help to provide some basis of a meaningful comparison between the two periods.

The results of the major studies on rural poverty for the sixties and early seventies are presented in Tables 2.1 to 2.3. The first set of studies started with Naseem's pioneering work[3] which attempted to estimate the percentage of the persons lying below two arbitrarily chosen poverty lines.[4] It was found that the proportion and number of rural poor were very high. However, the trends in poverty were sensitive to the choice of a poverty line (see Table 2.1).

On the basis of this evidence Naseem concluded that

> Even though abysmal poverty has to some extent been reduced by the process of growth and by some sharing of the fruits of growth, the number and proportion of people with a sustainable expenditure level has not been appreciably affected.[5]

3 S.M. Naseem "Mass Poverty in Pakistan: some preliminary findings" *The Pakistan Development Review* Winter 1973.

4 Although Naseem himself termed these as arbitrarily determined he did cite T.M. Khan and S.R. Bose's study "*Report on Income of Agricultural Workers in Pakistan*", Mimeo. (P.I.D.E., Karachi, 1968) who considered Rs.300 per capita per month to be not much above the subsistence level. He also cited the figure for India which was Rs.200 per month.

5 S.M. Naseem op. cit.

Talat Alauddin extended Naseem's work from 1969/70 to the year 1971/72[6] and measured poverty not only in terms of real consumption expenditure but also in terms of real income (see Tables 2.1 and 2.2). Her study seemed to confirm Naseem's results that poverty at the lowest level was declining over time and that "decline in poverty is really moving from a very low income expenditure group to a slightly higher income/expenditure group".[7]

Table 2.1 Rural Poverty Estimates Based on Per Capita Expenditure Per Annum (per cent)

Year	Below Rs.225	Below Rs.250	Below Rs.300	Below Rs.350
	(Talat, 1975)	(Naseem, 1973)	(Naseem, 1973)	(Talat, 1975)
1963/64	26.0	43.1	60.5	83.1
1966/67	15.0	32.0	59.7	80.1
1968/69	10.0	25.1	61.5	75.5
1969/70	nil	26.0	59.7	73.3
1970/71	nil	6.3[a]	54.1[a]	81.8
1971/72	nil	19.3[a]	58.4[a]	87.4

Note: [a] Based on Talat, 1975 estimates.

Sources: S.M. Naseem, "Mass Poverty in Pakistan", *Pakistan Development Review*, Winter, 1973, Talat Alauddin, "Mass Poverty in Pakistan — A Further Study", *Pakistan Development Review*, Winter, 1975, pp. 433–34.

From these two earlier studies, focus shifted on estimating the extent as well as trends in poverty related to the absorption of a minimum diet based on nutritional requirements. Naseem's paper is the only major work using this criteria.[8] Defining the poverty line in terms of the level of per capita expenditure in constant prices of 1959/60 which would afford a consumption basket yielding 2,100 calories he used three different levels representing the amounts of income that permit the intake of 95 per cent, 92 per cent and 90 per cent of the minimum required calories. The results are presented in Table 2.3. Naseem concluded that, "when poverty is defined in more extreme and intolerable terms, it appears to have remained roughly unchanged in percentage terms over the years. Of course, the absolute numbers of households and population below each poverty line have increased over the years".[9]

The basic criticism of the works cited above revolves around two issues. The first is valid for all three studies (and indeed for a number of studies in other countries) in that it questions the method employed for the conversion of a distribution of income based on households into one of per capita income

6 Talat Alauddin "Mass Poverty in Pakistan: a further study" *The Pakistan Development Review* Winter 1975.
7 Ibid p. 445.
8 S.M. Naseem "Rural Poverty and Landlessness in Pakistan" in ILO *Poverty and Landlessness in Rural Asia* (Geneva 1977).
9 Ibid p. 46.

which is not built from the original enumeration. The second is specifically directed at Naseem's later work (i.e. Naseem, 1977) and questions the procedure used in arriving at a poverty line based on a per capita level of expenditure consistent with minimum caloric intake.

The first criticism has been levelled in rather strong terms by Mujahid[10] who argues that by ignoring variations in the size of households belonging to the same income group (and hence per capita expenditure of households) the earlier studies fail to draw a line between those having a per capita expenditure less than the poverty line and those having a per capita expenditure higher than the poverty line. These estimates therefore include households as poor which are not poor and otherwise. According to Mujahid therefore, "this fundamental shortcoming of methodology leaves the estimates of poverty virtually without meaning".[11] He then goes on to suggest an improved methodology which by taking the distribution of each given size of households separately provides the basis for distinguishing between households having a per capita income less than the poverty line and those having per capita income higher than the poverty line.[12] The results which are given in Table 2.2 show that the proportion of poor and poverty stricken households in rural areas registered a *rise* during 1963/64 to 1969/70 under both the poverty lines used by Naseem (1973) and reverses the earlier evidence which showed that poverty measured by the lower of his two poverty lines had declined.

Table 2.2 Rural Poverty Estimates Based on Per Capita Income Per Annum (per cent)

Year	Below Rs.225	Below Rs.250		Below Rs.300		Below Rs.350
	(Talat, 1975)	(Talat, 1975)	(Mujahid, 1978)	(Talat, 1975)	(Mujahid, 1978)	(Talat, 1975)
1963/64	33.5	56.5	29.2	67.4	41.6	80.0
1966/67	15.6	30.8	40.6	48.8	55.8	61.4
1968/69	23.2	36.9	—	63.8	—	76.6
1969/70	21.0	35.6	39.5	61.1	52.6	81.8
1970/71	11.6	28.6	—	60.1	—	79.2
1971/72	19.3	41.6	—	64.8	—	87.0

Sources: Talat Alauddin, op.cit.
G.B.S. Mujahid, "A Note on Measurement on Poverty and Income Inequalities in Pakistan: Some Observations on Methodology", *Pakistan Development Review*, Autumn, 1978.

10 G.B.S. Mujahid "A Note on Measurement of Poverty and Income Inequalities in Pakistan: Some observations on Methodology" *Pakistan Development Review* Autumn 1978.
11 Ibid p. 367. Mujahid's criticism is in fact valid for any attempt to convert a distribution of income based on households to that of per capita income. The problem arises because the data are not grouped *after* a ranking of households according to per capita income. The assumption normally made in the use of this grouped data to estimate the extent of poverty are that smaller sized families which may be above the poverty line but are shown below are offset by larger sized families where the reverse holds true.
12 This is done as follows. Since the HIES data include a cross classification of households by number

The other major criticism is of Naseem's (1977) methodology for estimating the poverty line. In this case cross-section and time series data on average per head total monthly expenditure and average per head calorie intake pertaining to five years for which data were available were pooled and the latter was regressed on the former. Two types of problems may arise in this method of poverty line estimation. First, the application of the ordinary least square is inefficient because of its implicit assumption of the constancy of the intercept and slope across different cross-sections. That this was not the case was obvious from Naseem's earlier work[13] (based on the same data base) wherein the slope coefficient exhibited substantial variation across the years. Secondly, to the extent the share of food in total expenditure varies inversely with the income of the household the regression equation embracing all the income groups may over-estimate the poverty line. These limitations could cast serious doubt about Naseem's estimate on rural poverty in Pakistan.

Table 2.3 Estimates of Rural Poverty Based on Minimum Nutritional Requirements

(per cent)

Year	Below Poverty Line I (95% of minimum of 2,100 calories)		Below Poverty Line II (92% of minimum of 2,100 calories)		Below Poverty Line III (90% of minimum of 2,100 calories)	
	Households	Population	Households	Population	Households	Population
1963/64	79	72	62	54	54	45
1966/67	73	64	63	52	55	44
1968/69	74	64	63	53	56	46
1969/70	76	68	56	46	45	36
1970/71	79	71	58	47	48	38
1971/72	82	74	65	55	54	43

Source: S.M. Naseem, "Rural Poverty and Landlessness in Pakistan", in ILO, *Poverty and Landlessness in Rural Asia*, Geneva, 1977, p. 46.

Our evidence on rural poverty in the seventies is based on two main sources. The first reveals the results of a nutritional survey carried out by the Planning Commission in 1977. However, the results are weak (to some extent due to the narrow base of the data) and do not stand up well when subject to detailed analysis. The second is more reliable and based on an analysis of the only HIES carried out after 1971/72 in 1979. In the case of both surveys we also had access to ungrouped data (i.e. for each individual household) — for the entire sample for the nutritional survey and for one quarter (July-September 1979) for the HIES data. In the case of the latter, since in carrying out the

of members per household and by monthly income he constructs a distribution by income and size. He then applies the poverty line to each household of different sizes to estimate the percentage of household below the poverty line by linear interpolation.

13 S.M. Naseem, "Rural Poverty and Landlessness in Pakistan — Dimensions and Trends", (Mimeo). 1976.

sample survey the whole sample is divided into four equal parts, carried out in each quarter, the representativeness of the original sample is therefore maintained in the data of a single quarter.

The major drawback of 1979 HIES data (which applies to the results of one quarter as well as to the entire grouped data) is with regard to its overall coverage of different areas of Pakistan. For the North Western Frontier Province (N.W.F.P.), the whole of Malakand Division (i.e. districts of Swat, Dir and Chitral) and all of the tribal areas are excluded from the sample. Since these are generally known to be the much poorer regions of the province the results lead to serious underestimation of poverty in N.W.F.P. and hence also for the whole country.

Determination of the Poverty Line

The poverty line used is on the basis of caloric requirement of 2,550 calories per day per adult, as suggested by the Nutrition Cell of the Planning Division.[14] In the case of the Micro Nutrient Survey, direct evidence on caloric requirement was available but this was not the case for the HIES Survey. The caloric requirement was, therefore, converted into food expenditure per adult. However, the July-September 1979 HIES data available with us did not contain the quantities of food items consumed by households.[15] We have therefore used the 1971/72 HIES Survey, to arrive at the food expenditure per adult consistent with the stipulated caloric requirement. The prices of various food items, the consumption pattern of the groups used in the poverty line construction and the poverty lines are provided in Tables 2.16 to 2.18. Household size by membership was converted into adult equivalent using the nutritional scales worked out on the basis of caloric requirement of different age groups.

In terms of July 1979 prices, the monthly food expenditure needed to achieve 2,550 calories per day according to the consumption pattern of the lowest two income groups in 1971/72 works out to Rs.65 per adult equivalent. Under the consumption pattern of slightly higher income groups the required food expenditure rises to Rs.75 per adult. These poverty lines are used to arrive at the estimates of *very poor* (Rs.65 or less) and *poor* (Rs.75 or less) respectively for 1979. For 1977 the corresponding estimates are Rs.50 and Rs.60 per month.

In the Micro Nutrient Survey of 1977 more than one measure were used to arrive at the nutritional intake. Per capita nutrient intake was estimated by assessing the dietary recall of the persons who prepared meals for the household members during the day prior to the day of the interview. Some individuals of

14 M.A. Khan and M.A. Khan *Nutritional Standards of Growth for Infants and Young Children and Recommended Dietary Allowances for Pakistani Population* Planning and Development Division, Government of Pakistan, 1980.

15 The results of the complete 1979 HIES data have only been recently made public. These were not available when the July-September 1979 HIES data were being examined by us.

the household — head of the family, pregnant and lactating females — were asked to report their diet of the previous day. This individual dietary data were also supplemented by the mother's response about her children of three years of age or less. Furthermore, each household's food expenditure was recorded which constituted a third measure of dietary intake of the family.

Not surprisingly these three different measures yielded varying levels of undernourishment. The family dietary intake data (provided by the persons who prepared household meals) revealed that 15 per cent of the households were underfed. The individual's dietary intake data on the other hand suggested that around 33 per cent of the population in rural areas suffered from undernourishment. Caloric intake estimated on the basis of the food expenditure indicated that more than 20 per cent of the households failed to meet their caloric requirement.

Besides the inconsistent results, mostly owing to different methodologies, the age and sex composition of the households were ignored while estimating the incidence of poverty. The data of the survey were therefore subjected to further investigation by examining them for individual households. The age/sex composition of the household was adjusted by using the adult equivalence scales worked out on the basis of caloric requirement of different age groups (see Table 2.18).

The caloric intake based on the dietary recall of the housewife presented in Table 2.4 suggests that 21.5 per cent of the household accounting for 24.7 per cent of population in rural areas fell below the poverty line of 2,550 calories per adult equivalent. Roughly half of these households and their population even fail to acquire 75 per cent of the caloric requirement. It can be seen from Table 2.4, however, that caloric intake bears no systematic relationship to food expenditure per adult. This lack of association may be partly due to the narrow base of the caloric data. The amount of food eaten on a single day was recorded, allowing for marginal reporting error which may lead to wide fluctuations. However, there is also serious reason to believe that the information on caloric intake suffers from misreporting. Indeed this is the conclusion drawn by the authors of the report on Micro Nutrient Survey who conceded that the data provided by housewives were exaggerated and unreliable.[16]

An alternative estimate of rural poverty based on monthly food expenditure (adult equivalent) which can afford a recommended daily allowance of 2,550 calories per adult was applied to this data. The results (Table 2.5) show that 20.2 per cent of the households and 26.6 per cent of the population would fall under our category of *very poor* while the corresponding estimate for *poor* are 27.7 per cent and 35.02 per cent respectively. While farm and non-farm population are hardly distinguishable at the lower level of poverty with a rise in the poverty line the incidence of poverty sharply rises on non-farm population. One may infer that while destitutes are proportionally

16 Planning and Development Division, Nutrition Cell, *Micro Nutrient Survey of Pakistan*, Vol. II, June 1978.

Table 2.4 Extent of Malnutrition — Rural Areas 1977

Calorie Per Adult Equivalent per day	Percentage Distribution in Sample			Calories		Food Expenditure per Adult Equivalent (Rs./month)
	Household	Persons	Adult Equivalent	Per Person	Per Adult Equivalent	
Less than 1,000	0.95	1.11	1.18	656	741	55.2
1,001–1,500	3.20	3.67	3.59	1,001	1,218	82.0
1,501–1,750	3.40	4.49	4.39	1,347	1,644	84.0
1,751–2,000	2.83	3.48	3.78	1,620	1,925	79.5
2,001–2,250	3.96	4.00	4.00	1,785	2,140	91.6
2,251–2,549	7.16	7.98	8.01	2,047	2,407	76.6
2,550–3,000	13.20	13.77	13.88	2,349	2,782	98.7
3,000 +	65.28	61.29	61.17	4,010	4,795	97.8

Source: Based on disaggregated data from the *Micro Nutrient Survey of Pakistan*, 1977.

divided between farm and non-farm population, poverty is more widely spread in the latter.

Application of our poverty criteria based on monthly food expenditure needed to achieve 2,550 calories per day to the ungrouped data pertaining to 2,911 households in rural areas of Pakistan obtained from the HIES of 1979 yields the result that 31 per cent of the households and 37 per cent of the population belonged to the category of poor in July-September 1979. Roughly two-thirds of these households and population are very poor according to our definition of the term. The provincial comparison of poverty incidence provided in Table 2.6 must bear in mind the limitations of the data for the N.W.F.P. province. Interestingly the percentage of the population lying below the poverty line in Sind is higher than in Punjab despite its higher per capita and average household income. The provincial inequality indices, however, bear a positive relationship with the incidence of poverty.

Trends in Rural Poverty over Time

Given the fact that our results for the seventies are not comparable with those of the earlier studies for the sixties we have reexamined the HIES data for three years of the sixties (i.e. 1963/64, 1966/67 and 1969/70) together with the complete 1979 HIES so as to come up with a consistent series. The methodology employed for the estimation of poverty levels for the different years is the same as Mujahid's which circumvents the problem regarding different size of households in the use of grouped data. The two poverty lines used are the same as applied in our earlier results for the seventies, i.e. on the basis of 2,550 calories

per day per adult, as suggested by the Nutrition Cell of the Planning Division. The monthly food expenditure needed to achieve this consumption pattern in 1979 prices were converted into per capita by using the average ratio of adult equivalent to population. These figures were then further converted into per capita income using the ratio of food expenditure to income for rural areas. For the earlier years the per capita poverty lines were adjusted by using the consumer price indices. The estimates of the poverty lines for the different years are given in Table 2.19.

Table 2.5 Poverty Incidence in Rural Areas in Pakistan, 1977
(per cent)

	Food Expenditure per Adult Equivalent			
	Rs.50 or less per month		Rs.60 or less per month	
	Households	Persons	Households	Persons
Farm Population	20.2	27.0	26.4	34.1
Non-farm Population	21.4	27.0	31.5	39.0
Total	20.2	26.6	27.7	35.02

Source: Based on ungrouped data from the *Micro Nutrient Survey of Pakistan*, 1977.

The results are shown in Table 2.7. Between 1963/64 and 1969/70 the level of rural poverty showed a significant increase. The percentage of very poor households increased from 30.6 per cent in 1963/64 to 35 per cent in 1966/67 and had further increased to 38.4 per cent by 1969/70. The corresponding estimates for poor households are 40.5, 46.3 and 51.5 per cent respectively. When we compare the results for 1979 with those of 1969/70 the level of rural poverty shows a significant reduction, from 38.4 per cent of very poor households to 26.5 per cent and from 51.5 to 37.8 per cent from poor households. It is interesting to note that the estimates of rural poverty for 1979 are now quite near the figures for 1963/64 although the levels in 1979 are slightly less. However, as pointed out earlier the results for 1979 underestimate the level of poverty for the N.W.F.P. province and hence the whole country as they did not cover some of the poorer regions of that province.

The fact that we do not have comparable data between 1972 and 1979 leaves a major gap in our estimates for the seventies. The results would have been especially interesting for as we shall see, agricultural growth slowed down drastically between 1972 and 1977 as compared to the high growth achieved in the sixties. In the subsequent years agricultural growth again recovered. To that extent perhaps the estimates of rural poverty for 1979 are more meaningful in that in comparing the results with 1969/70, we are comparing years of good agricultural harvests.

As to the possible reasons why poverty levels increased in the sixties and showed a decline in the end seventies, these are investigated later. In the next section, we review briefly the trends in agricultural production during the sixties

Table 2.6 Poverty, Per Capita Income and Inequality, Rural Pakistan, 1979

	Percentage of Population: Poor	Percentage of Population: Very Poor	Gini Index (Population)	Average Per Capita Income	Percentage of Households: Poor	Percentage of Households: Very poor	Gini Index Household	Average Household Income	Number of Households in Survey
Pakistan (Rural)	*36.89*	*26.5*	*.282*	*163*	*30.58*	*21.2*	*.406*	*992*	*2,911*
Punjab	38.87	28.1	.179	151	33.64	23.8	.363	897	1,914
Sind	42.58	31.5	.429	203	30.50	22.0	.535	1,354	423
N.W.F.P.[a]	15.83	7.5	.156	163	13.09	5.9	.347	1,000	443
Baluchistan	58.60	47.8	.239	185	45.03	32.8	.485	1,221	131

Note: [a] For the N.W.F.P., the whole of Malakand Division (i.e. districts of Swat, Dir and Chitral) and all of the tribal areas are excluded from the sample. Since these are generally known to be the much poorer regions of the province, the results lead to serious underestimation of poverty in N.W.F.P. and hence for the whole country.

Source: HIES July–September 1979.

Table 2.7 Trends in Rural Poverty, 1963/64–1979

Year	Percentage of Households		Percentage of Population	
	Poor	Very Poor	Poor	Very Poor
1963/64	40.5	30.6	40.96	32.2
1966/67	46.27	34.96	50.71	38.79
1969/70	51.5	38.42	54.52	43.19
1979	39.8	26.5	41.23	29.31

Note: Estimates of poverty lines at current prices for different years are given in Table 2.19.

Sources: C.S.O., Household Income and Expenditure Survey, 1963/64, 1966/67, 1969/70 (Karachi [various years]).
Federal Bureau of Statistics, *Household Income and Expenditure Survey*, 1979, Karachi, 1982.

and seventies and more importantly for the latter period some of the structural changes which were introduced by the then government.

Overall Agricultural Performance — An Overview

The sixties witnessed a major breakthrough in agricultural production in Pakistan. After a period of almost virtual stagnation in the fifties, when population growth had clearly outstripped growth in foodgrain production, during the period between 1959/60 and 1971/72 output of major crops had a trend growth rate of 7.7 per cent. Growth of output of foodgrains, although slightly lower, was still equally impressive with a trend growth rate of 7 per cent. With population growth estimated at 3 per cent per annum during the sixties for the first time there was an impressive increase in the overall availability of foodgrains for most years of the sixties barring two, i.e. 1965/66 and 1966/67 when there were severe drought conditions.

A look at Table 2.8 brings out the two distinctive phases through which the so called "green revolution" passed. The first phase is between 1961/62 and 1964/65 when increases in output took place in response to an increase in water availability and mainly as a result of tubewell installation in the private and public sectors.[17] The second phase especially for foodgrain production starts after 1966/67 and continues till 1969/70. The increases in output during this phase is indeed phenomenal and were mainly the result of the introduction of the high yielding varieties of seed, large increase in fertiliser and pesticide and continued increase of supplementary water. In four years, foodgrain production increased by over 55 per cent. Similarly for all crops the output index

17 See J. Hamid, "A Review of the Agricultural Breakthrough in West Pakistan", *The Punjab University Economist*, Vol. VIII, No. 1, June 1970.

showed an increase of over 46 per cent between 1965/66 and 1969/70. During the subsequent two years, however, output marginally declined.

Table 2.8 Trends in Agricultural Output and Incomes in the Sixties

Year	Index of Agricultural Production		Terms of Trade	Income per Farm Household	Rural Per Capita Income
	All Crops	Foodcrops			
	(1)	(2)	(3)	(4)	(5)
1959/60	100	100	100	100	100
1960/61	100	98	115	117	101
1961/62	109	105	113	127	103
1962/63	119	108	108	136	106
1963/64	118	108	111	190	108
1964/65	128	120	115	159	111
1965/66	127	107	108	151	112
1966/67	135	114	114	173	116
1967/68	157	150	109	195	122
1968/69	168	160	102	198	126
1969/70	186	177	106	232	130
1970/71	174	164	104	217	n.a.
1971/72	183	170	108	241	n.a.

Sources: For (1) and (2) Government of Pakistan, *Pakistan Economic Survey 1981/82*, Islamabad, 1982.
Col. 3 from Gotsch, and Brown, *Prices, Taxes and Subsidies in Pakistan Agriculture, 1960–70*, World Bank Staff Working Paper 387, 1980, pp. 35–37. (Agricultural output prices have been deflated by an index of all manufactured goods).
Col. 4 is based on estimated decline in the number of farm households by 1.8 per cent over the period 1961 to 1972 (see Table 2.10).
Col. 5 from S.M. Naseem, "Mass Poverty in Pakistan", *Pakistan Development Review*, Winter 1973.

An attempt is made to translate the increase in output to increases in real income of farm households by adjusting for the terms of trade and changes in the number of farm households over this time period. The results again are quite revealing. As seen in the next section, there was a decline in the total number of farm households between 1961 and 1972. The increase in per capita income of this group over the time period works out at over 8 per cent per annum. This was despite the fact that in the second half of the sixties the terms of trade moved drastically against the agricultural sector after having considerably improved in the first half.

The incomes of the rest of the rural population, i.e. the landless labour class (dependent mainly on agriculture) and the non-agriculture households increased more slowly. Naseem's estimates of growth in overall rural per capita income between 1960 and 1970 based on national income accounting estimates

suggest an overall growth of about 4.4 per cent, i.e. approximately half of that of the farm households.[18] What this would, *a priori*, imply is that the gains from the dramatic increase in agricultural output during the sixties were confined mainly to the farm households. It also implies that as a result of the high growth rate of rural population and the shift from farm to non-farm households, there was far less improvement in real incomes of the non-farm households.

The period of the seventies and early eighties can be divided into two distinct sub-periods. During the first, between 1971/72 and 1977/78, there was in contrast to the sixties, a sharp slowing down in agricultural growth. The rate of growth of output of major crops declined to about 2.1 per cent and that of foodgrains to 3.3 per cent. In the subsequent period 1977/78 to 1981/82 there was a "dramatic" recovery with growth of output of major crops increasing to 5.4 per cent and that of foodgrain production by 5.7 per cent[19] (see Table 2.9). In fact this contrast in growth rates was not only restricted to the agricultural sector. The overall performance of the economy was also much better in the second period as compared to the first.[20]

The earlier period had also seen the introduction of land and tenancy reforms by the People's Party. However, it is now generally agreed that their impact on the agrarian structure was marginal. Under the land reforms of 1972, when ceilings were reduced to 150 and 300 acres for irrigated and unirrigated land the total land resumed was 1.31 million acres. This was allotted to about 75,000 persons. Under the 1977 land reforms, the ceiling was further reduced to 100 acres irrigated and 200 unirrigated land. By June 1980, a total of 166,836 acres had been resumed of which 47,823 acres had been distributed to 3,834 persons.[21]

A major factor why land reforms were not effective was that in most cases landlords had taken anticipatory action and divided their holdings among their family members before December 1971, the date to which the 1972 land reforms applied. Even the estimate of 2.8 million acres of land that should have been forthcoming under the 1972 Reform was only half met — reflecting the difficulties in the actual implementation of the reform.[22] Even if this target had been met the reform would have benefited no more than 16 per cent of the tenants.

18 The rural GDP was arrived at by giving GDP from agriculture a constant weight of 0.95 and GDP from non-agriculture weight of 0.59 in 1950/51 and declining by 1 per cent year to 0.40 in 1969/70. See S.M. Naseem, "Mass Poverty in Pakistan", *Pakistan Development Review*, Winter 1973.

19 The drastic slowing down in agricultural growth in the seventies was explained by the then government mainly in terms of bad weather, natural calamities (like floods and pest attacks) and mishaps (e.g., Tarbela dam). However, the present government has also given considerable stress to 'poor economic management', especially as regards pricing policies. The increase in output in the late seventies has been the result of good weather conditions, better pricing policies and more timely availability of inputs especially fertiliser (see Government of Pakistan, *Pakistan Economic Survey* (various years), Islamabad, for these changing viewpoints).

20 During the period 1971/72 and 1976/77 growth rate of GDP, GNP and per capita income were 4.9, 5.5 and 2.5 per cent; for 1976/77 and 1981/82 the corresponding figures were 6.5, 6.7 and 3.7 per cent respectively. (Calculated from *Pakistan Economic Survey*, 1981/82, op. cit.).

21 Government of Pakistan, *Agricultural Statistics of Pakistan, 1980*, Islamabad, 1981, p. 99.

22 R. Herring and M. Ghaffar Chaudhry, "The 1972 Land Reforms in Pakistan and their Economic Implications", *Pakistan Development Review*, Autumn 1973, pp. 245–279.

Table 2.9 Trend in Agricultural Output in the Seventies

Year	Index of Agricultural Production (1959/60 = 100)		Term of Trade (1959/60 = 100)
	All Crops	Food Crops	
1971/72	183	170	108
1972/73	188	181	112
1973/74	196	190	121
1974/75	187	183	108
1975/76	199	207	102
1976/77	203	212	n.a.
1977/78	209	208	n.a.
1978/79	219	238	n.a.
1979/80	239	245	n.a.
1980/81	249	254	n.a.
1981/82[a]	258	260	n.a.

Note: [a] Provisional.
Source: Same as Table 2.1.

Two other reforms were introduced by the People's Party as regards eviction of tenants and the share of the produce between the landlords and tenants. According to the first, eviction of tenants from their holdings by the landlord was prohibited, except by a decision of the court. The aim was to assure security of tenure and to bar arbitrary eviction. Also in the event of the sale of land, the tenant was given the right of pre-emption. As regards the second the cost of seed and water rate were made the responsibility of the landlord while the remaining inputs were to be shared equally. Also, levy of cess and service without remuneration demanded by the landlord from tenants was declared unlawful throughout the country.[23]

It is difficult to assess the impact of these two reforms. It is quite possible that during the seventies the landlords found it more difficult to evict tenants as compared to the sixties. It was not so much because the tenants resorted to legal remedies when confronted with eviction but due to the fact that the coming into power of the People's Party, which led to some change in the balance of power between the landlord and the tenants in the rural areas. While it is true that the class content of the People's Party leadership was mainly feudal (and this largely explains why the land reforms could hardly be implemented) this did not preclude an increasing awareness and assertion of their rights by the tenants (as by many other classes) during this period. Although the removal of the government in July 1977 did lead to some change it was not possible to return to the power balance as it existed in the sixties. As to the sharing of costs of certain inputs and that of seeds and water rates being borne by the landlord, evidence

23 For details see Government of Pakistan, *Pakistan Economic Survey* 1972/73, Islamabad, 1973, p. 11.

of its actual implementation or its impact on the relative division of the produce between the tenant and landlord was not available. If relative shares of produce remained the same and a greater share of costs was borne by the landlord then the position of tenant farmers would have improved.

While the impact of the land reforms on the agrarian structure was marginal the large increase in overseas migration which took place in the seventies had an important impact on the overall economy as well as the rural sector. It is estimated that by the end of 1981 there were a total of 2.1 million migrants.[24] The official estimates on remittances show that they increased from $339 million in 1975/76 to $2,218 million in 1980/81. They were equal in amount to the country's total export earnings from merchandise exports and worked out as 10 per cent of the GNP in 1980/81.

According to a recent report about 63.1 per cent of migrant workers came from the rural areas.[25] Based on the estimate of a total of 2.1 million workers this means that 1.33 million workers had gone out from the rural areas. This would work out as approximately 6.8 per cent of the total rural labour force and since almost all are male migrants it amounts to 7.9 per cent of the total male labour force.[26] Also using the same breakdown the total inflow of remittances to the rural areas for 1980/81 would be $1,343 million which is equivalent to about 20 per cent of total agricultural output in that year. Clearly, the impact of the large outflow of the rural labour force on the functioning of the rural labour market and that of remittances on rural incomes would be very significant.

Trends in Rural Poverty — An Explanation

The basic argument which we shall put forward as a possible explanation for the increase in the level of rural poverty in the sixties and its continuation at a significantly high level in the seventies, despite a decline in relation to the late sixties, is that there took place during this period significant changes in the agrarian structure, especially the size distribution of holdings which had important implications for the rural occupational distribution of households. These changes were basically the result of the new technology, first introduced in the sixties, which increased profitability in the agricultural sector and led to large landowners resuming formerly rented-out land for self cultivation. This led to an eviction of tenant farmers who now cultivated either much smaller

24 Based on estimates of the Pakistan Institute of Development Economics (PIDE) study till 1979 to which the official estimates of outflow of migrants for 1980 and 1981 have been added. See I. Gilani, et al., *Labour Migration from Pakistan to the Middle East and Its Impact on the Domestic Economy*, PIDE (Monograph), Islamabad, 1981. The official estimates for 1980 and 1981 are from *Pakistan Economic Survey*, 1981/82, op. cit.

25 The PIDE report cited above.

26 Based on 1981 Census estimates for population and *Labour Force Survey, 1979/80* (Mimeo.) for labour force participation rates. The former are from *Pakistan Economic Survey*, 1981/82, op. cit.

sized holdings or joined the ranks of the landless labourers and non-agricultural households.

As a result of these changes, the economic conditions of those evicted could have deteriorated. Hence any improvement in the level of rural poverty because of increases in incomes of farm households may have been counteracted. What we will try to show is that during the sixties as a result of these adverse changes it is possible that rural poverty levels did not decline and could even have increased. During the seventies, however, the impact of these changes were mitigated by other changes, mainly outside the farm sector, especially the very high levels of overseas migration and the spread effects of overseas remittances in the rural economy which could help explain the decline in rural poverty during this period.

Changes in the Agrarian Structure

We start by examining changes in the size distribution of holdings by comparing the results of the adjusted[27] 1960 Census with those for 1972 and the most recent results available from the 1980 Census. These are shown for All Pakistan and the major provinces of Punjab in Tables 2.10 and 2.11.[28] The important change which takes place during the period of the sixties and seventies is the increase in the share of the size class below 7.5 acres in the number of farms and farm area while that of the size class 7.5 to less than 25 acres declined. In the sixties in the case of the Punjab there is also an increase in the share in farm area in the size class of 25 acres and above.

As regards changes in tenure classification the most significant result which emerges is the drastic decline both in the sixties and seventies in the number of tenant farmers and farm area cultivated by them in all size category of farms. Correspondingly there is a significant increase in numbers and areas of owner farms. These changes are shown in Table 2.12 for the Punjab province which witnessed the most widespread adoption of new technology in the sixties. They clearly illustrate the changes in the tenure classification of farms and farm

[27] The methodological difference between the two censuses arises from the fact that whereas the 1960 Agricultural Census gathered information about landholdings partly by direct interview and partly by extraction from revenue records, the 1972 Agricultural Census did not use this extraction procedure at all and relied solely on the interview method. The adjusted estimates are based on ratios derived from an exercise conducted by the Census Organisation in 1972 in a selected sample of villages on an All Pakistan basis to get some idea of the magnitude of the differences resulting from a change in methodology. Akmal Hussain has carried out these detailed adjustments in the 1960 Census. While admitting that these ratios do not capture regional variation in the degree of bias in the various size classes in the 1960 Census he argues that the adjusted 1960 size distribution with these ratios provides a better basis of comparison with the 1972 size distribution than the adjusted estimates. (For details, see Akmal Hussain, *Changes in the Agrarian Structure of Pakistan and the Implications for the Demand of Labour*, ILO/ARTEP, Mimeo, 1982).

[28] Punjab is the largest province both in terms of rural population (57.8 per cent in 1972) and cultivated area (57 per cent in 1969/70).

area in all size category of farms which were mainly the result of landowners resuming their formerly rented-out land and the widespread eviction of tenant families.[29]

Table 2.10 Number of Farms and Farm Area by Size of Farm, All Pakistan, 1960, 1972 and 1980

(000)

Size of Farm (acres)	Number of Farms			Farm Area		
	1960[a]	1972	1980	1960[a]	1972	1980
Less than 7.5	1,140	1,639	2,071	4,413	5,992	7,339
	(34.1)	(43.6)	(50.9)	(8.6)	(12.2)	(15.6)
7.5 to 25	1,758	1,715	1,625	23,086	21,970	20,453
	(52.6)	(45.6)	(39.9)	(44.9)	(44.8)	(43.4)
25 to 50	3,121	2,891	264	9,742	9,215	8,386
	(9.3)	(7.7)	(6.5)	(19.0)	(18.8)	(17.8)
50 to 150	114	103	96	8,226	7,402	6,913
	(3.4)	(2.7)	(2.4)	(16.0)	(15.1)	(14.7)
150 & Above	18	16	14	5,935	4,482	4,004
	(0.5)	(0.4)	(0.3)	(11.5)	(9.1)	(8.5)
Total	3,342	3,762	4,070	51,402	49,061	47,095
	(100)	(100)	(100)	(100)	(100)	(100)

Note: [a] For adjustment of 1960 figure see footnote 27. Figures in parentheses are percentages.

Sources: For 1960 and 1972 based on Pakistan Census of Agriculture, 1960, op. cit., Pakistan Agriculture Census, 1972, op. cit. in Akmal Hussain, "*Changes in the Agrarian Structure of Pakistan and the Implications for the Demand for Farm Labour*", Report submitted to ILO/ARTEP, July 1982 (Mimeo).
For 1980 based on *Pakistan Census of Agriculture, 1980 — All Pakistan Report*, Agricultural Census Organisation, Government of Pakistan, Lahore, 1983.

Some attempts have been made to estimate this increase in landless labour especially as a result of resumption for the period of the sixties. Naseem[30] using the data of the 1961 Population Census (supported with the unadjusted data of the 1960 Agricultural Census) and the 1972 Population and Agricultural Census data, came up with an estimated increase in landless labour of 2.34 million during 1960/61 to 1972, i.e. from 609,000 to 2.95 million — an increase of almost 357 per cent! His estimates suggests a radical transformation

29 The breakdowns for the sixties of farms and farm area by tenure classification (Table 2.12) must be treated with some caution as these are *unadjusted* estimates. It was not possible to make similar adjustments as done in Table 2.10 and 2.11 for 1960 as the results of the survey conducted by the Census Organisation (on which the adjustment factors are based) only give the different estimates for number and farm area by size of farm and not by tenure classification.

30 For details, see S.M. Naseem, *Underdevelopment, Poverty and Inequality in Pakistan*, Vanguard Publications, Lahore, 1981, pp. 174–175.

Table 2.11 Number of Farms and Farm Area by Size of Farm, Punjab, 1960, 1972 and 1980

(000)

Size of Farm (acres)	Number of Farms			Farm Area		
	1960[a]	1972	1980	1960[a]	1972	1980
Less than 7.5	788	981	1,234	2,980	3,660	4,488
	(35.5)	(41.3)	(48.5)	(9.9)	(11.8)	(15.0)
7.5 to < 25	1,172	1,114	1,060	15,352	14,404	13,444
	(52.8)	(46.9)	(41.7)	(51.2)	(46.4)	(45.0)
25 to < 50	197	209	184	6,074	6,608	5,792
	(8.9)	(8.8)	(7.2)	(20.2)	(21.3)	(19.4)
50 to < 150	55	65	59	3,883	4,569	4,231
	(2.5)	(2.7)	(2.3)	(12.9)	(14.7)	(14.1)
150 & Above	6	7	7	1,728	1,789	1,943
	(0.3)	(0.3)	(0.3)	(5.8)	(5.8)	(6.5)
Total	2,218	2,376	2,544	30,017	31,030	29,898
	(100)	(100)	(100)	(100)	(100)	(100)

Note: [a] Adjusted. Figures in parentheses are percentages.
Source: Same as Table 2.10.

Table 2.12 Tenure Classification of Farms and Farm Area by Size Class, Punjab, 1960 and 1972

(per cent)

Size of Farm (acres)	Number of Farms								
	Owner			Owner cum Tenant			Tenant		
	1960	1972	1980	1960	1972	1980	1960	1972	1980
Less than 7.5	48.1	56.0	65.8	14.4	18.9	15.9	37.5	25.1	18.3
7.5 to <25	32.9	31.3	42.4	26.4	35.3	31.7	40.7	33.4	25.9
25 to <150	35.8	38.4	48.6	25.6	37.4	34.8	38.6	24.2	16.8
150 & Above	70.5	65.6	72.3	20.6	28.4	24.4	8.9	6.0	3.3
	Farm Area								
	Owner			Owner cum Tenant			Tenant		
	1960	1972	1980	1960	1972	1980	1960	1972	1980
Less than 7.5	42.1	49.0	59.2	20.4	24.8	21.1	37.5	26.2	19.7
7.5 to <25	33.1	30.8	42.3	26.9	36.7	32.7	40.0	32.5	25.0
25 to <150	38.4	40.5	51.0	25.8	38.9	35.3	35.8	20.6	13.7
150 & Above	75.6	66.6	73.6	16.6	28.1	23.7	7.8	5.3	2.7

Source: Same as Table 2.10.

in the occupational distribution of rural households, with the number of farm households declining from 74.6 per cent of the total to 46.4 per cent in 1972 and correspondingly the landless labour and non-agricultural households doubling their share from 25.3 per cent to 53.6 per cent of the rural population.

These results would provide strong evidence of increasing eviction of tenant farmers and resulting increase in landless labour. Unfortunately, there is sufficient reason to believe that his data for the initial year on the number of cultivators, i.e. farm households are on the high side. Although he had cited two sources of his estimate, the unadjusted 1960 Agricultural Census and the 1961 Population Census and both did give figures very close to each other, it is now generally accepted that the unadjusted 1960 Agricultural Census based on revenue records greatly overestimates the number of farm households. Also it is not clear whether the 1961 Population Census definition of farm households are comparable with the 1972 Agricultural Census. His estimates, therefore, would greatly exaggerate the transformation in the rural occupational distribution of households in the sixties.

An alternative estimate of the increase in the number of agricultural labourers (i.e. both landless as well as operators of farms who spend part of their time during the year as wage labourers in agriculture) over and above what would have taken place due to their natural growth rate of population is provided by Akmal Hussain.[31] Based on Population Census data he estimated their increase between 1961 and 1973 at about 0.8 million. According to his estimates the number who became agricultural labourers during this period constituted nearly 43 per cent of the total agricultural labourers in 1973. Thus almost half of the number of agricultural labourers in 1973 had entered this category as a result of the pressures towards proletarianisation of the peasantry.

For the seventies, lack of available data at present makes it difficult to try to estimate the increase in the landless labour during this period. However, based on Population Census data and the Agricultural Census data for 1972 and 1980, we can make some rough estimates of the changes in the proportion of farm and non-farm households in the rural population.[32] According to these figures the total number of farm households declined during this period from 54.8 per cent of the total rural households in 1972 to 47.3 per cent in 1980 with a corresponding increase in the non-farm households (i.e. landless labourers and non-agricultural households).

31 Akmal Hussain, op. cit., pp. 67–70.
32 These have been derived as follows:

	1972 (Thousands)	1980 (Thousands)
Rural Population	47,363	58,641
Rural Households	7,287	9,023
Farm Households	3,993	4,265
Non-farm Households	3,294	4,758

Estimates of rural population are based on 1972 and 1981 Population Census data. Number of households are based on the assumption of average household size of 6.5. Figures for farm households for 1972 and 1980 are based on Agricultural Census. Estimates of non-farm households are residually derived.

b The evidence seems to suggest that during the period covered and especially in the sixties, there were important changes in the agrarian structure, such as the size distribution of holdings and the increase in non-farm households of the landless labour class. The link between these changes and poverty levels in the rural areas would depend, amongst others, on two factors. Firstly, the changes in economic conditions of the smaller size farms of those who had lost part of their rented-in land and secondly, the evicted tenants who joined the category of the landless labour and were now seeking employment in both the farm and non-farm sector.

It is in this context, both for small size farmers having to supplement their farm incomes through wage labour and the landless labour class, that the whole question of what happened to the demand for labour during this period and the impact of increasing mechanisation on demand, gains considerable importance. If as a result of mechanisation, demand for labour declined, then it is possible that the incomes of these classes may well have also fallen if alternative employment opportunities were not being created in the non-farm sector.

It is also within this context that the question of the impact of significant overseas migration during the seventies has to be viewed. If the surplus rural labour were able to seek employment outside, then the pressure on the domestic labour market would be reduced, allowing the employment opportunities to be shared among fewer aspirants and with corresponding favourable impact on rural wage rates.

Let us first turn to the economic conditions of the small size owner cultivators (holdings less than 7.5 acres) whose numbers increased substantially during the sixties and seventies. In its earlier stages of introduction, the inputs of the new technology (new seed varieties and fertiliser) were monopolised by the large farmers and tubewell installation was beyond the cultivators' financial means (and power to get credit from agricultural financial institutions). However, after a lag of between one and a half to two years they were able to gain access to at least the new seed varieties and fertiliser (and in some cases to tubewell water on either payment or share of produce basis).[33] While by the end sixties this may not have been very widespread, in the seventies this change would most certainly have come about.

At the same time, however, farmers who moved into the size class of 7.5 acres and less because of loss of rented-in land could have faced an adverse impact on their incomes despite the gains from higher yields on their smaller holdings. The most important change was that it was no longer profitable to maintain their bullocks earlier used for ploughing on their now smaller holdings. In some cases they even had to reduce their livestock holdings. The result was that they were now dependent on hiring-in tractors for land preparation and other activity. If they were also at the same time purchasing water from tubewell owners, then a significant share of their produce would have to be paid

[33] See Leslie Nulty, *The Green Revolution in Pakistan*, New York, Praeger Publishers, 1972.

out for these services. In these circumstances to supplement their reduced incomes, such farmers would also have to seek wage labour on nearby farm (during the harvest season) and in other non-farm activity.

The important question which therefore arises is the change in the demand for labour during this period, especially the impact of increasing mechanisation through the introduction of tractors, wheat threshers and in the late seventies, cutters and binders. Increasing tractor mechanisation took place not so much in the sixties, for it is estimated that by 1973, there were only 25,000 tractors,[34] but in the seventies. Between 1973/74, and 1981/82 a total number of 122,088 tractors were imported, i.e. an increase of almost five and a half times as compared to the total tractor population in 1973 (Table 2.13). The compulsion of the larger farmers to increasingly go in for mechanisation in the seventies after having resumed land is mainly for two reasons. First, farmers encounter difficulties in the hiring of a large number of labourers within a short period of time in an imperfect labour market, particularly in a situation where the duration of the peak season has been constricted due to multiple cropping. Second, farmers face an acute supervision problem as they have to supervise a large workforce to perform their tasks efficiently.

The impact of mechanisation on the demand for labour has been investigated in a number of studies carried out during the sixties.[35] A World Bank study by McInerney and Donaldson based on a study of 202 farms covering the period 1966/67 estimated the net destruction of full time jobs at five per tractor.[36] More recently a study was undertaken by the Agricultural Development Corporation (ADC) during 1978/79.[37] The basic findings of the survey may be summarised as follows:

Table 2.13 Tractors Imported

Year	Numbers	Year	Numbers
1965/66	1,665	1974/75	7,190
1966/67	4,113	1975/76	10,809
1967/68	2,182	1976/77	15,554
1968/69	4,411	1977/78	11,902
1969/70	5,696	1978/79	15,178
1970/71	3,879	1979/80	19,313
1971/72	4,224	1980/81	16,137
1972/73	1,847	1981/82 (Provisional)	20,789
1973/74	5,216		

Source: Pakistan Economic Survey, 1981/82, op. cit.

34 Naseem (1977) op. cit., p. 55.
35 A detailed review of the earlier studies is available in Naseem (1977) and Akmal Hussain op. cit.
36 J.D. McInerney and G.F. Donaldson, *The Consequences of Farm Tractors in Pakistan*, World Bank Staff Working Paper No. 210, February 1975).
37 The survey was carried out in Faisalabad District (Punjab). It was based on a random sample of villages from each of the sub-divisions of the district distinguished by different land use/farming

(a) Tractorisation has led to the expansion of farm area operated by tractor-farmers at the expense of tenants and others who previously farmed the areas involved. There is little evidence to suggest that tractor-farms are more intensively farmed, and it is possible that the areas taken over from tenants may be less intensively cultivated. The argument that tractorisation leads to more intensive cropping and, therefore, more on-farm employment does not hold. On the other hand, the expulsion of tenant families directly reduces the amount of labour applied to the area previously rented out.

(b) The recent spread of tractor-powered wheat thresher has reduced employment in this important seasonal activity. Adoption of other tractor-powered equipment, such as rice threshers and harvesters, would reduce still further the main employment and income earning opportunities of the rural community.

(c) The rapid spread of hire-services based on the tractor and attachments duplicates the labour saving effects on farms which have not invested in tractors, that is, we are no longer dealing with "tractor" and "traditional" farms but with a whole range of "intermediate" farms which are hiring a labour saving technology for a number of operations including threshing.

On balance, it can be said that increasing mechanisation has led to a decrease in demand for labour even though it is difficult to quantify in precise terms its overall labour displacing impact. If there took place in the sixties and seventies an increase in landless labour and increasing proletarianisation of the peasantry and simultaneously a decrease in the demand for labour in the agricultural sector through increasing mechanisation, then this increase in supply should have adversely affected the growth of real wage rates in the period covered *unless* there were important counteracting forces in terms of increase in labour demand within or outside the farm sector or the existence of rigidities and imperfections in the functioning of the labour market.

The data, although available for only a very limited number of years on movements of rural wage rates during this period, show an increasing trend. For the sixties and early seventies data on agricultural wages of permanent and casual workers for the Punjab show an increase in real wages between 1966 and 1973 (Table 2.14). Akmal Hussain, in his field survey data of the Punjab, estimates that the monthly real wage of permanent unskilled agricultural labourers over the period 1960 to 1978 increased by 29.2 per cent. Extrapolating the wage increase between 1966 and 1973 as calculated by Guisinger (Table 2.14) to the period 1973 to 1978 comes with an increase of 31.2 per cent which is quite near that of Akmal Hussain's estimates.[38]

How did such a situation come about? A possible explanation is that during the sixties there was an overall increase in the demand for labour as a

patterns. Finally 25 villages were selected with 88 farmers owning tractors. For details, see Brain Lockwood, *Farm Mechanisation in Pakistan: Policy and Practice*, paper presented at the Joint ADC/IRRI Workshop on the Consequences of Small Rice Farm Mechanisation in Asia, Philippines, September 1981.

38 Akmal Hussain op. cit., pp. 89-92.

result of the introduction of the new technology and that this took place at a time when the use of labour displacing technology in the form of tractor mechanisation and threshers was still not widespread. For the seventies when mechanisation increasingly displaced labour, this coincided with a period of significant overseas migration especially to the Middle East which led to not only a decline in the pressures on the labour market but in some cases to acute and widespread shortages during the peak demand seasons. Also, as a result of remittances there was considerable injection of demand in the non-farm sectors (mainly construction and services) which considerably increased the overall demand for labour in the rural economy.

Table 2.14 Trends in Agricultural Wages

	1952	1960	1966	1973
Permanent workers (Rs./month)				
Nominal	30.3	n.a.	47.7	78.7
Real	37.8	n.a.	40.0	44.6
Casual workers (Rs./day)				
Nominal	1.25	1.9	2.5	4.5
Real	1.6	1.9	2.1	2.6

Note: Real wages in constant prices of 1960.

Source: Based on Board of Economic Inquiry, (Punjab), *Agricultural Labour and Wages in the Punjab* (Lahore: various years) in S. Guisinger, "Trade Policies and Employment: The Case of Pakistan", in A.O. Krueger et al., *Trade and Employment in Developing Countries: Individual Studies*, National Bureau of Economic Research, 1981.

While no detailed exercise has been attempted to quantify the overall net impact of the new technology on employment for the sixties, both the micro evidence collected from survey data and the indirect estimates at the provincial level (mainly for farms between 5–12.5 acres) suggest that its impact was both positive and substantial. This effect was of course very much subject to regional variations especially between irrigated and non-irrigated areas. The main factors responsible for this were an increase in cropping intensity and crop productivity, changes in cropping pattern and an increase in the level of farming activity in operations such as seed-bed preparations, fertiliser application, waterings, cultural practices and pesticide application.[39] Some idea of the extent of this increase can be had from Khan's estimates for the Punjab

39 During the period 1959/60 and 1969/70 total cultivated area for All Pakistan increased from 40.8 million acres to 47.5 million acres and cropped area from 36.3 to 41.5 million acres. The increase in irrigated area was from 25.5 to 30.9 million acres. For the Punjab province the corresponding figures for cultivated area, cropped area and irrigated area were 24.7 to 27.1 million acres, 24.0 to 27.9 million acres and 16.6 to 21.0 million acres. (Source: M.H. Khan, *Underdevelopment and Agrarian Structure in Pakistan*, Colorado, 1981, p. 20).

province. For the size class 5–12.5 acres based on coefficients derived from village survey data, he estimated that between 1960 and 1972 the total man-years of employment created as a result of increase in cropped acreage, cropping pattern and increased crop activity was 0.22 million. For the medium and large sized farmers he indirectly estimated an increase of about 1 million man-years of employment as a result of the same factors.[40] On the other hand the total displacement of labour as a result of tractor mechanisation by the end of the period was not very substantial. Based on the earlier quoted World Bank study, the maximum displacement as a result of tractor mechanisation by the end of 1973 would work out as 125,000 man-years.[41]

An explanation of why rural wage rate increased in the seventies when tractor mechanisation and other labour displacing technology was fast spreading would have to take into account the large scale overseas migration of rural labour which took place during this period. We have earlier estimated that about 8 per cent of the male rural labour force migrated during this period. This outflow acted as a major absorbent to the increase in labour supply which would otherwise have taken place both as a result of labour displacing technology as well as the natural increase in population during the seventies which was over 3 per cent per annum.

It is important to emphasise here that, as regards casual hired labour in the farm sector, increases in daily wage rates, though a positive development, can in no way be taken as evidence of increases in their real annual incomes unless we know the total number of days for which they were gainfully employed. Also in the case of those who suffered either a part loss in their farm incomes through loss of rented-in land or those farmers who joined the rank of the landless, the comparison would have to be made in terms of the loss in income against that now supplemented by or completely earned through wage labour. Unfortunately, however, there exists hardly any evidence on these two issues and this remains a major weakness in any explanation of rural poverty being put forward for this period.

Our earlier evidence on rural poverty levels by occupational groups had shown that the incidence of poverty was higher in the non-farm population. Also analysis of macro data on rural income trends in the sixties has shown that the gains of agricultural growth had accrued mainly to the farm households. It is therefore possible that as a result of a fall in the total number of days worked, real annual incomes did not show much improvement or could have even fallen. However, it is not possible to resolve this issue unless more data are forthcoming.

As to the impact of overseas migration and remittances on poverty we have analysed at a disaggregated level the information collected in the PIDE Survey of the International Migration Project carried out in 1980. The sample of the survey was made up of 1,153 migrant households and 556 non-migrant

40 Dilwar Ali Khan, "Employment and Occupational Change in Rural Punjab: Consequences of Green Revolution" in *Employment Planning and Basic Needs in Pakistan*, ILO/ARTEP, 1978.
41 McInerney and Donaldson (1975), op. cit.

households from 250 villages and 20 towns in Pakistan. We have restricted our analysis to migrant households in the rural areas defined as the ones which have at least one member working in the Middle East.

Table 2.15 Percentage of Poor Households and Population With and Without Remittances

	Income per Adult Equivalent less than Rs.80 per month			
	With Remittances		Without Remittances	
	Household	Population	Household	Population
Total	9.09	11.22	40.50	44.76

Source: Based on International Migration Project Data, 1980, P.I.D.E.

The percentage of poor households and population with and without remittances are shown in Table 2.15. The results clearly bring out the difference that remittances could make towards poverty elimination. The percentage of poor households and associated population quadruples in the case of those who have no remittances. As to whether one can conclude from this that poverty actually declined as a result of migration and overseas remittances one would need to have some idea of the income levels of the migrants before they migrated. This is not available. However, since the breakdown of those who have migrated by skill categories shows that the largest proportion were unskilled labourers it is quite possible that remittances play an important role in reducing poverty. On the other hand it has been calculated that the initial investment needed to get clearance for migration was about Rs.25,000 in 1979.[42] This would be a major constraint for the poorest households who would find it exceedingly difficult to raise this initial amount of resources.

However, even if it is true that it was not the poorest households which migrated and therefore overseas migration did not directly contribute to a reduction in poverty levels, its indirect impact was still considerable and positive. Not only did it reduce the pressure of increasing labour supply on the farm sector where demand was being adversely affected through increasing mechanisation, but the inflow of overseas remittances especially in the construction and service sector created increasing job opportunities in the non-farm rural economy.

Conclusions

Over the last two decades Pakistan has witnessed far reaching changes in its rural economy. The main objective of the present study has been to analyse

42 See Gilani, et al., op. cit.

he impact of these changes on rural poverty measured either in terms of per pita income or minimum caloric requirements. While an important lesson hat we draw from our analysis is the need for considerable restraint in inter- eting the results both of our study for the seventies as well as earlier studies e the sixties especially as regards changes in poverty over time, on balance, it still possible to conclude that the impact of these changes on the alleviation of verty may not have been as favourable as many may hope to believe. What ir study more clearly shows is that an important explanation for this must be ound in the structural changes especially as regards the occupational distribu- n of households which have in most cases accompanied these changes. owever, far more evidence than presently exists as regards the wages and comes of the landless labour and non-agricultural households as well as the nctioning of the rural labour market is required before one can draw any firm nclusions. Also the more important recent event of large scale overseas igration needs far more detailed analysis than we presently have been able to ndertake to see its impact on poverty.

Perhaps a major contribution of the studies on rural poverty have been e fact that they have explored the process by which agricultural growth and ructural changes in the rural economy can unleash forces which either versely affect or make it exceedingly difficult to ameliorate the high existing verty levels in the rural areas. It is quite possible, however, that other gnificant developments may take place outside the farm sector which counter- ct and mitigate the results of the earlier mentioned forces. In this case it is portant to investigate these developments, how they operate and what can be one (if possible, through government action) in strengthening them. Our aim in no way to suggest that given the present agrarian structure, rural poverty n in no circumstances be significantly reduced. Under special conditions this n happen as we have seen in the seventies. However, the speed with which this ill happen, the costs and benefits of the process, all have to be weighed and here possible suitable actions initiated which can either reduce the costs or can th increase and help spread more evenly the benefits of agricultural growth.

ppendix

Table 2.16 Prices of Various Food Items Used in the Poverty Line Estimation

Rupees

Commodities	January 1977	July 1979	April 1980
1. Wheat flour average quality	1.40	1.66	1.89
2. Rice total average quality (per kilo)	2.68	3.07	2.92
3. Pulses (per kilo)	3.47	3.39	3.87

Table 2.16 — *continued*

Rupees

Commodities	January 1977	July 1979	April 1980
4. Milk (per kilo)	3.20	3.62	3.39
5. Butter and ghee	24.18	28.86	31.00
6. Vegetable oil	10.42	11.40	11.40
7. Meat (beef) (per kilo)	7.30	8.30	8.38
8. Vegetables	2.24	2.72	1.42
9. Refined sugar	4.30	4.30	4.80
10. Desi sugar	3.60	7.52	6.86

Notes: 1. Retail prices of the food items in different urban centres of Pakistan were weighted. The following were used:

Karachi	(20%)	Peshawar	(10%)
Lahore	(15%)	Rawalpindi	(5%)
Faisalabad	(10%)	Gujranwala	(5%)
Multan	(10%)	Sialkot	(5%)
Hyderabad	(10%)	Sukkar	(5%)
		Quetta	(5%)

2. Pulses represent a weighted figure. It is assumed that people consume pulses in the following ratio:
Gram 50%, Mash 30%, Masoor 15% and Moong 5%.
3. Vegetables represent 50% potatoes and 50% onions.
4. For rural areas it is assumed that prices are 15% lower than urban areas.

Source: C.S.O., *Monthly Statistical Bulletin* (various issues).

Table 2.17 Food Expenditure per Adult Equivalent for Caloric Requirement by Consumption Pattern of Different Income Groups: Rural Areas

Period	Income Groups (Rs. per month)					
	<50	50–100	100–150	150–200	200–250	250–300
Jan 1977	52.95	53.02	55.83	54.08	60.01	60.61
July 1979	61.28	66.16	67.40	68.02	71.93	72.55
April 1980	61.91	65.48	68.48	68.60	72.58	73.23

Notes: Consumption pattern represented in HIES of 1971/72 used with computation of this table. Price data from Table 2.16.

Table 2.18 Adult Equivalence Scales

Age Group	Calories per day (required)	A.E.	
0–1	820	0.32	
2–5	1,400	0.55	
Male			
6–10	2,350	0.92	
11–15	2,600	1.02	
16–19	2,950	1.16	
20–39	2,550	1.00	Adult
40–49	2,420	0.95	
50+	2,295	0.90	
Female			
6–10	2,100	0.82	
11–15	2,300	0.90	
16–19	2,700	1.06	
20–39	2,160	0.85	
40–49	2,050	0.80	
50+	1,950	0.76	

Note: Calorie requirements for various age sex groups suggested by Khan and Khan op. cit. are used. These requirements represent some modifications of those of FAO/WHO.

Table 2.19 Estimates of Rural Poverty Line
(Per Capita Income at Current Prices)

(Rs.)

Year	Poor	Very Poor
1963/64	27.56	24.0
1966/67	31.85	27.76
1969/70	35.79	31.19
1979	109	95

Note: The two poverty lines worked out for 1979 on the basis of caloric requirement per adult (2,550) were Rs.65 and Rs.75 for 'very poor' and 'poor' respectively. These were then converted into per capita by using the average ratio of adult equivalent to population (0.8) which works out to Rs.60 for poor and Rs.52 for the very poor. These figures were then converted into per capita income using the ratio of food expenditure to income ratio of rural areas of 0.55. The corresponding poverty lines for rural areas are Rs.109 and Rs.95. For earlier years the per capita poverty lines were adjusted by using the consumer price indices.